Adaptive Approach for EOSDIS

MODIS Technical Team Meeting

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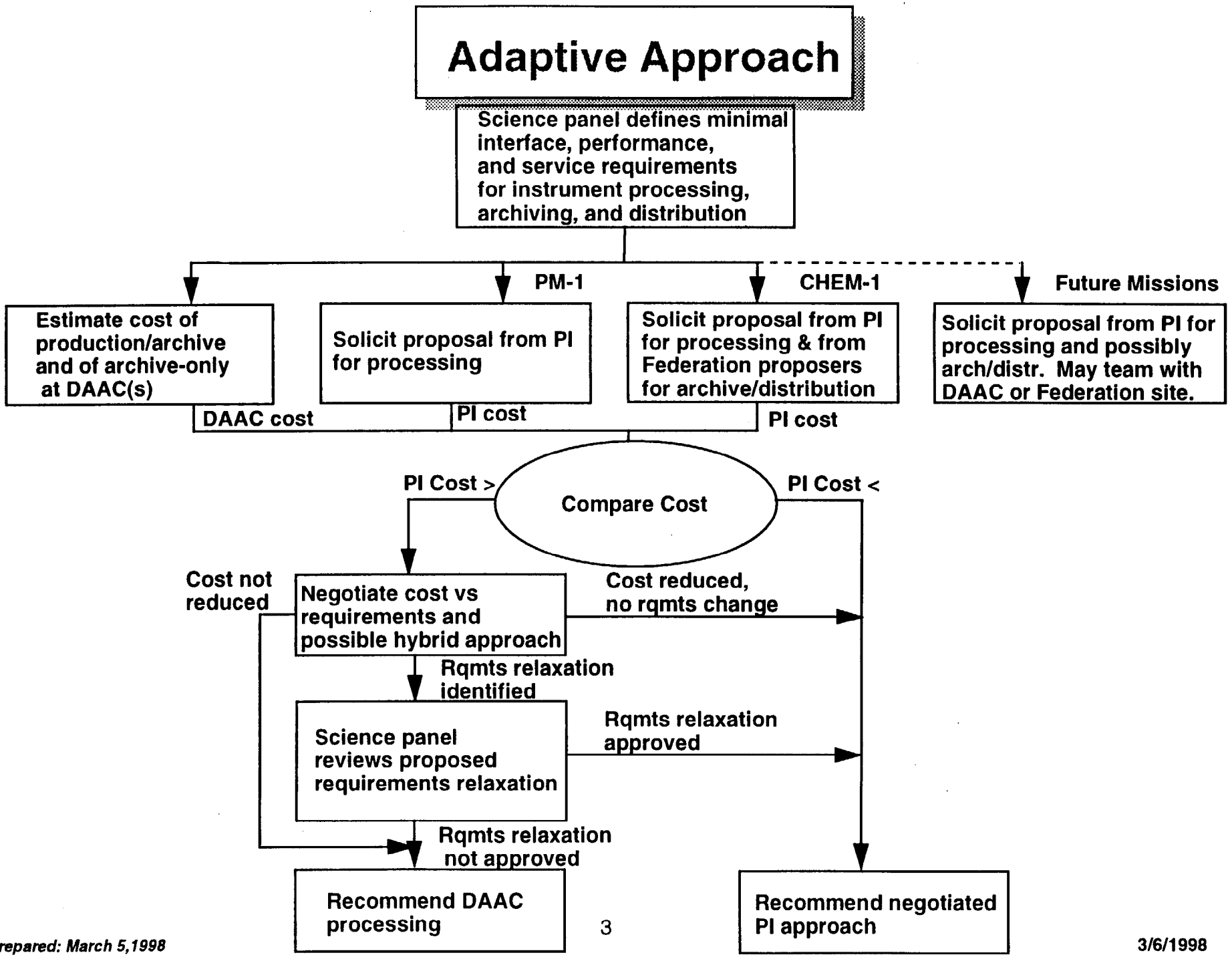
New Paradigm

- Objective: Assure that EOSDIS is responsive to NASA Earth Science Program and science needs
  - Adopt "new ways" of doing business - more collaborative approach with PIs
  - Evolve from predetermined implementation approach to hybrid implementation based on cost, technical, and programmatic factors
- Approach:
  - Implement adaptive decision process for individual instruments, enabling PI processing or PI processing/archiving/distribution where cost effective
  - Complete ECS development through incremental releases on shorter time intervals
    - » Functions to be included in each release to be determined by science feedback process defined by EOSDIS Project Scientist

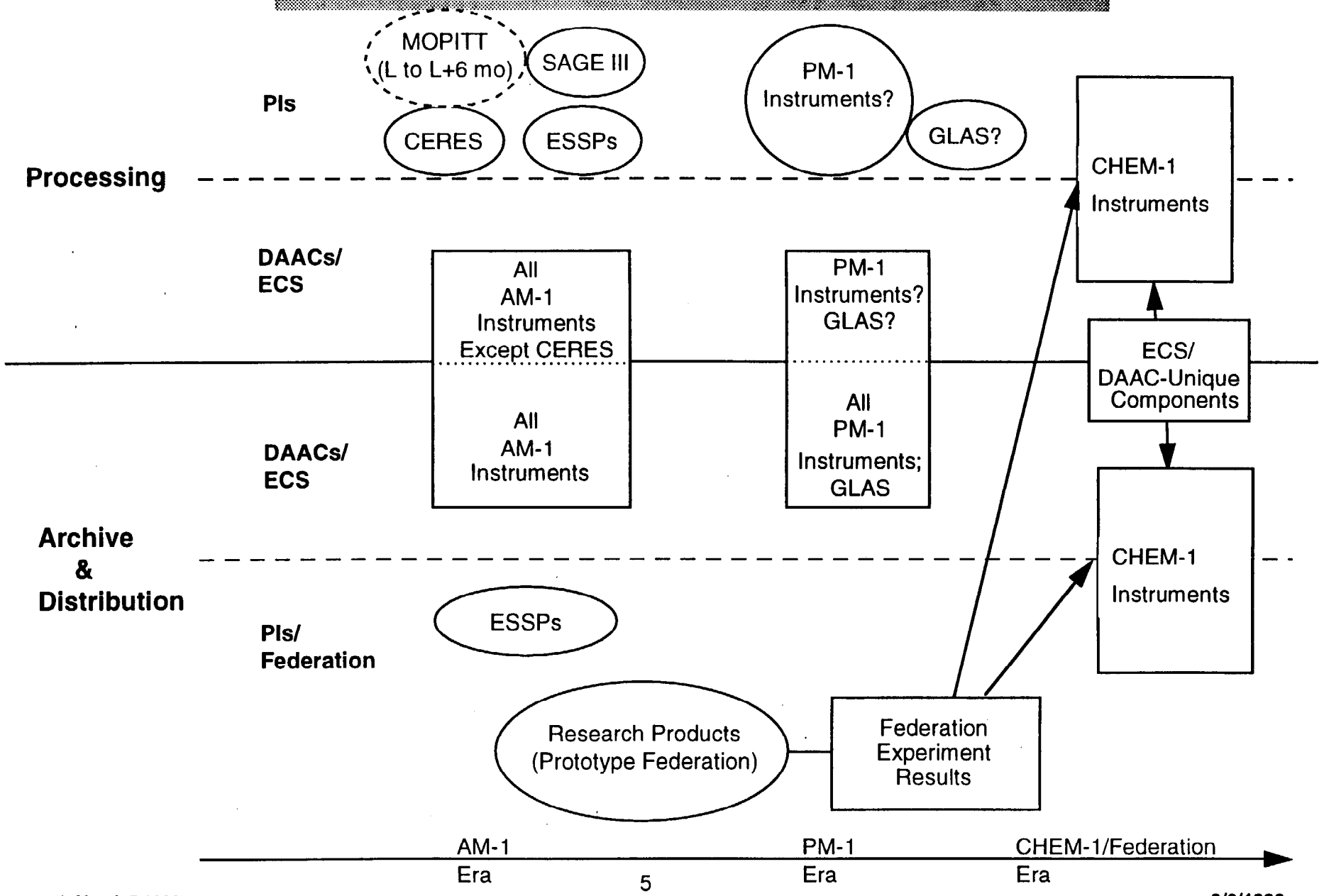
Adaptive Approach



Adaptive Approach

- Solicit proposals from appropriate sources (PIs, DAACs, Federation competition, etc.) for processing, archiving, and distribution functions
- Functions competed and number of potential sources grow with time (based on experience and longer lead time for future missions)
  - PI processing for PM-1 due to short lead time
  - PI or Federation processing/archive/distribution beginning with CHEM-1 (pending success of prototype Federation experiment)
- Provides process for comparison of PI/Federation cost with current baseline cost and for negotiation to assure objective comparison
  - Recommendations based on cost, but ESSPO Program (Code 170) decision will take science and other factors into account

EOSDIS Adaptive Evolution



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Adaptive Approach for PM-1 Era - Steps

- **Develop revised Level 1 (high-level) requirements**
  - Rethink how L1 requirements can better be expressed, linking requirements to science drivers - e.g.,
    - » Long-term vs short-term datasets
    - » "20 year test" on archival
    - » "Active archive" vs low or moderate levels of service
    - » Expected end users - PIs only, non-PI Earth scientists, or broader community?
    - » Expected interdisciplinary usage
  - Review Level 2 Requirements as needed
  - Obtain science community review and consent
- **Reaffirm/Update data processing resource requirements**
  - Ensure that they are current
  - Identify and resolve with DPRB any resource issues relative to budget

Adaptive Approach for PM-1 Era - Steps

- Analyze impact of changes to L1 requirements on lower level requirements
  - Determine impacts to EOSDIS' components
  - Assure requirements are allocated to appropriate implementers
  - Assure requirement traceability and completeness
- Develop and baseline new / revised Level 2 Requirements
- Develop Interface Requirements' Specifications
  - Ensure minimal requirements are placed on PIs (yet meet needs of broader user community and ensure stewardship of long-term data records)
- Call for and receive proposals from PIs
  - Call to include requirements, Statement of Work, Cost Proposal Instructions, Proposal Evaluation Process
- Evaluate proposals
  - Ensure requirements are met
  - Ensure all costs are accounted for
  - Compare with baseline costs (based on budget model)

PM-1 Era IRD Draft Outline

- **PI delivers to DAAC**
  - Data Products
    - » identity (i.e., which products)
    - » standard data products
    - » browse data
    - » delivery method, frequency, timeliness
    - » format(s)
    - » metadata
    - » QA information
  - HDF wrapper routines
  - Software - code, documentation, scripts
  - Support to DAAC user services group in responding to user requests/questions/anomalies
- **PI receives from DAACs**
  - Ancillary data
  - General user services that all other users get (all "pull" services provided by EOSDIS Version 2)
  - Data from other instruments on which the standard data products from his/her instrument are dependent (these data could also be obtained directly from other PIs)
- **PI receives from ESDIS**
  - Negotiation with external entities for new ancillary data products, flight dynamics services, etc.
  - ECS software toolkits and maintenance support for them
  - Documentation to support standards

Adaptive Approach for PM-1 Era - Steps

- Adjust costs/requirements (If PI-proposed costs exceed baseline costs)
  - Reduce requirements in consultation with science user representatives (including appropriate DAAC User Working Groups)
  - Compare revised costs with baseline costs
- Select approach
- Develop working agreements with PIs (and necessary mods to ECS, DAAC, EDOS, EBNet contract/SOWs)
- Start implementation

Status

- "Prototypes" for adaptive approach have occurred for TRMM/AM-1 era instruments on a case-by-case basis
  - LIS - processing, archival and distribution at SCF
  - MOPITT - processing during first six months at SCF
  - SAGE III - processing at SCF
  - SeaWinds - processing at SCF
  - CERES - proposed processing using LaTIS (outside ECS environment, though at LaRC DAAC)
- PM-1/CHEM-1 instrument PIs provided rough order of magnitude (ROM) estimates in preparation for ERG's October 1997 meeting
  - Analysis showed potential for cost savings in several cases
  - Justified proceeding with Adaptive Approach

Status (Cont'd)

- **Approach presented at ERG's October 1997 meeting has been refined**
  - **Activities and schedule have been defined**
    - » **Setting overall program policies and decisions by Code 170**
    - » **ESDIS Project provides necessary implementation support**
  - **Work on changes to Level 1 and 2 requirements has been started - led by EOSDIS Project Scientist and Code 170**
- **GLAS team looking for accelerated approach**
  - **Initially proceeding assuming "full" set of current interface requirements**
  - **Negotiate waivers based on PI proposal and changes to Level 1 requirements (see above)**

Adaptive Approach - Schedule

Reaffirm/Update data processing resource requirements	03/01/98
Develop Interface Requirements' Specifications	03/21/98
Develop and baseline new / revised L1 & L2 Requirements	03/31/98
Call for proposals from PIs	05/01/98
Receive proposals from PIs	07/01/98
Evaluate proposals	08/01/98
Adjust costs/requirements (If needed)	08/21/98
Select approach	08/31/98
Develop working agreements with PIs (and mods to ECS, DAAC, EDOS, EBNet contract/SOWs)	10/31/98